

Technical Workshop on Estuarine Habitat in the Bay Delta Estuary
Managing the Low Salinity Zone to Improve Estuarine Habitat and Protect Fish Populations

27 March 2012, 9:00 am – 4:30 pm
CalEPA's Coastal Room, 2nd Floor
1001 "I" Street, Sacramento

Purpose

- Characterize the response of selected biological indicators and ecological processes to changing locations of the low salinity zone in the Bay Delta Estuary
- Evaluate the utility of three-dimensional models in salinity management

Desired Outcomes

1. Identify which biological indicators and ecological processes can be expected to respond to changing locations of the low salinity zone (LSZ).
2. Identify how changing locations of the LSZ and changing volumes of estuarine habitat affect aquatic organisms.
3. Discuss the opportunities and constraints of using both one- and three-dimensional models to map and quantify changing volumes of estuarine habitat as the LSZ moves among several locations between Carquinez Strait and the western Delta.
4. Consider how year-to-year variation in Delta outflow and water management decisions affect the volume and value of estuarine habitat across all seasons of the year.

9:00 – 9:10	Welcome and introductions	Karen Schwinn USEPA
9:10 – 9:20	Agenda overview	Brock Bernstein
9:20 – 9:45	Historical Perspectives on the Estuarine Gradient	Robin Grossinger SFEI
9:45 – 10:10	Modeling Estuarine Processes using UnTRIM	Michael MacWilliams Delta Modeling Assoc.
10:10 – 10:35	Modeling Estuarine Processes using SUNTANS	Stephen Monismith Stanford University
10:35 – 10:40	Reflections on the presentations & transition to workgroups	Brock Bernstein
10:40 – 10:50	Workgroup instructions and assignments	Brock Bernstein
10:50 – 12:15	First workgroup session – Prepare first draft of discussion summaries	
12:15 – 1:30	Working lunch Second workgroup session – Review and revise discussion summaries	
1:30 – 2:30	Third workgroup session – Review and revise discussion summaries	

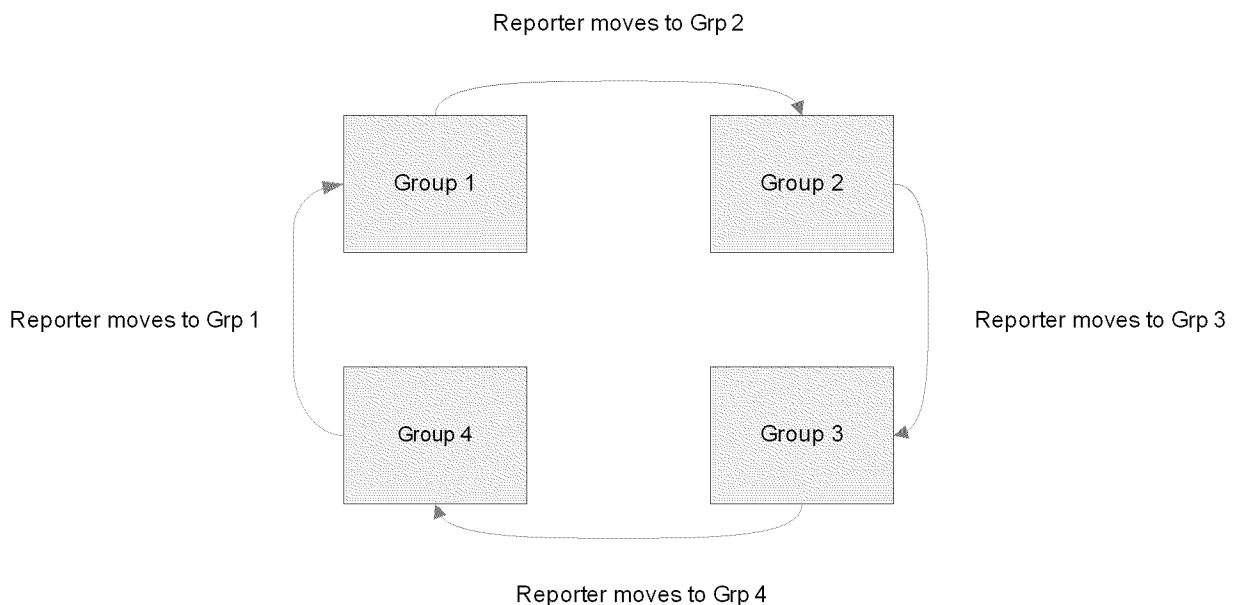
2:30 – 2:45	Break	
2:45 – 4:15	Group discussion – discussion summaries	Brock Bernstein
4:15 – 4:30	Wrap up and adjourn	Brock Bernstein

Workgroup process

This workgroup process is intended to increase the amount of direct interaction among participants, accelerate the refinement of ideas and products through multiple rounds of review and revision, and ensure that participants have the opportunity to address all topics. The process involves the following steps:

- Break the large group into four roughly equally sized groups
- Assign a topic to each small group
- Assign a discussion leader and a reporter for each small group
- First workgroup session: each group develops a solution to the assigned problem
- Reporters then rotate among groups (see figure)
- Second workgroup session: reporters brief their new groups on what the previous group produced and each group critiques and revises the previous group's product
- Reporters then rotate again
- Third workgroup session: repeat the briefing, critique, and revision of the previous group's product
- Final session: reconvene the large group and hear the reporters' summaries of how the product developed as it moved through several small groups

The reporters remain with the same topic as they rotate among the small groups. This helps provide some continuity as the different topics cycle through the small groups. The following figure illustrates how reporters move among the small groups at the end of each workgroup session.



Workgroup Questions

1. What biological indicators and ecological processes can be expected to respond to, and measure the ecological response to, changing locations of the low salinity zone (LSZ)?

As a starting point, please use the list below of Biological Indicators and Metrics.

2. How do changing locations of the LSZ and changing volumes of estuarine habitat affect key aquatic organisms (e.g., reproduction, survival, abundance, and diversity)?

As a starting point, please use the list below of Biological Indicators and Metrics.

3. How can both one- and three-dimensional models be effectively used to map and quantify changing volumes of estuarine habitat as the LSZ moves among several locations between Carquinez Strait and the western Delta?
4. How do year-to-year outflow variation and water management decisions change the volume and value of estuarine habitat across all seasons of the year?

DRAFT

BIOLOGICAL INDICATOR

METRIC

RESPONSE OF FISH STUDIED AT "X2" WORKSHOPS	
<i>Neomysis mercedis</i>	Metric TBD
<i>Crangon franciscorum</i>	Metric TBD
Molluscs	Metric TBD
Striped bass	Metric TBD
Starry flounder	Metric TBD
Longfin smelt	Metric TBD

FOOD PRODUCTION	
Area of Low Salinity Zone	Hectares
Volume of Low Salinity Zone	Cubic Meters
Time LSZ Spends in Proximity to Productive Habitat	Minutes

PRODUCTIVITY OF THE PHOTIC ZONE	
Depth of Penetration by Sunlight through Water Surface	Centimeters
Turbidity	Nephelometric Turbidity Unit (NTU)

ECOSYSTEM PROCESSES	
Diversity of Aquatic Habitat at Four Cross Sections	Numerical Index TBD for Habitat Structure for Fish, e.g., # of feeding spots, # of hiding spots.
Diversity of Flow Patterns at Four Cross Sections	Metric TBD
Interfaces of Currents with Accumulations of Food	Metric TBD

CONTAMINANTS	
Ammonium	Inhibit diatoms/promote microcystis ($\mu\text{mol L}^{-1}$) ¹
Selenium	Biological capture by overbite clams ($\mu\text{g L}^{-1}$) ²

SITE SPECIFIC STRESSORS	
Time LSZ Spends in Proximity to Outfalls	Minutes
Time LSZ Spends in Proximity to Pumps	Minutes
Time LSZ Spends in Proximity to <i>Egeria</i> Beds	Minutes
Time LSZ Spends in Proximity to Deep Channels	Minutes
Time LSZ Spends in Proximity to Power Plants	Minutes
Time LSZ Spends in Proximity to CVP/SWP Effects	Minutes

¹ See Dugdale's model

² See models by Luoma & Presser (fate of Se) and by Jan Thompson (clam abundance)

DRAFT